

The Frontispiece of the COSMOGRAPHIC

Representing the Phænomena on Tuesday December the 3d 1700,
by JOHN GARTE, Watch-Maker in Garden-Court, near the F

THE EXPLANATION.

It Consists of one large
Dyal-Plate, and four
lesser Plates, in each
Corner one.

THE first and large Dyal-Plate consists of three parts, the first is fix'd, and has engraven on it the Minutes; and in large Roman and Numerical Letters twice Twelves Hours, with the Halves and Quarters.

The second is chiefly moveable, having on it a Figure of the Sun; and at their due distances are engraven in Common and *Arabic* Characters, the Numbers of the Hours of the Day and Night throughout the World, with their Halves and Quarters.

This has a Diurnal Motion, whereby the Sun, by a Ray trajected from it to the Hour in the former Plate, shewes the Hour of the Day at *London*; and the Number of the Hour on this moving Circle applying it self to the Meridian of each Country in the Map, (hereafter mentioned) shewes what Hour of the Day or Night it is in each of them: By which also, may be found the Horary distances of Places, with several other Matters, which for Brevity sake are omitted.

Upon this, on the *Eastern* and *Western* sides are two Arches of a Circle, having the Names of the Months, and Signs of the *Zodiac* engraven on them to every fifth Degree: These have an Annual Motion, raising and depressing them according to the length or shortness of the Days of the Year; and the Sun abconds under them at his Setting, and emerges from under them at his Rising; and during the Interval, a Star shewes the Hour of the Night.

So that you never see the Figure of the Sun on the Clock, but when the Sun, in the Heavens, is above the *Horizon*: You also see the Rising and Setting of the Sun, its Entrance into the Signs of the *Zodiac*, the Arch which they, and the Sun in them, makes above or below the *Horizon*, with the length of the Day and Night throughout the Year.

Between these two Arches, at the bottom of the Circle, is placed an Equation Table to every seventh Day throughout the Year, to show how much a true adjusted Clock ought to be slower or faster than the Sun. In this Table, under the Title of every Month, in the first Column contains the Days of the Months, the second Column contains the Minutes and Seconds the Clock ought to be faster or slower than the Sun, according as it is express'd in the same Column.

At the end of this Equation Table is shew'd the place of the Sun in the *Ecliptick*, by the Signs being engraven and divided to every fifth Degree, on the before-mention'd Arches of a Circle; for as they rise and deprec from under the Equation Table, that is the Sign the Sun is in: And on the same Arches are engraven the Months of the Year, answering to the Signs of the *Zodiac*.

The third part is fix'd, and consists of a gilt Plate, in the Circumference whereof is the Equator, divided into 360 Degrees, reckon'd from the *Meridian* of *London*; and the Plate it self contains a Map of the *Northern Hemisphere* of the Earth, in which the *Meridians* are drawn at the Interval of 15 Degrees, as best serving to shew the Horary distances, together with the Longitude; but the *Parallels* of Latitude are drawn at 10 Degrees, as is usual in other Maps.

On the *Meridian* of 165 Degrees, at its Concurrence, with the *Parallel* Circles, is an Account of how many *Italian Miles* goes to a Degree, in the several Latitudes.

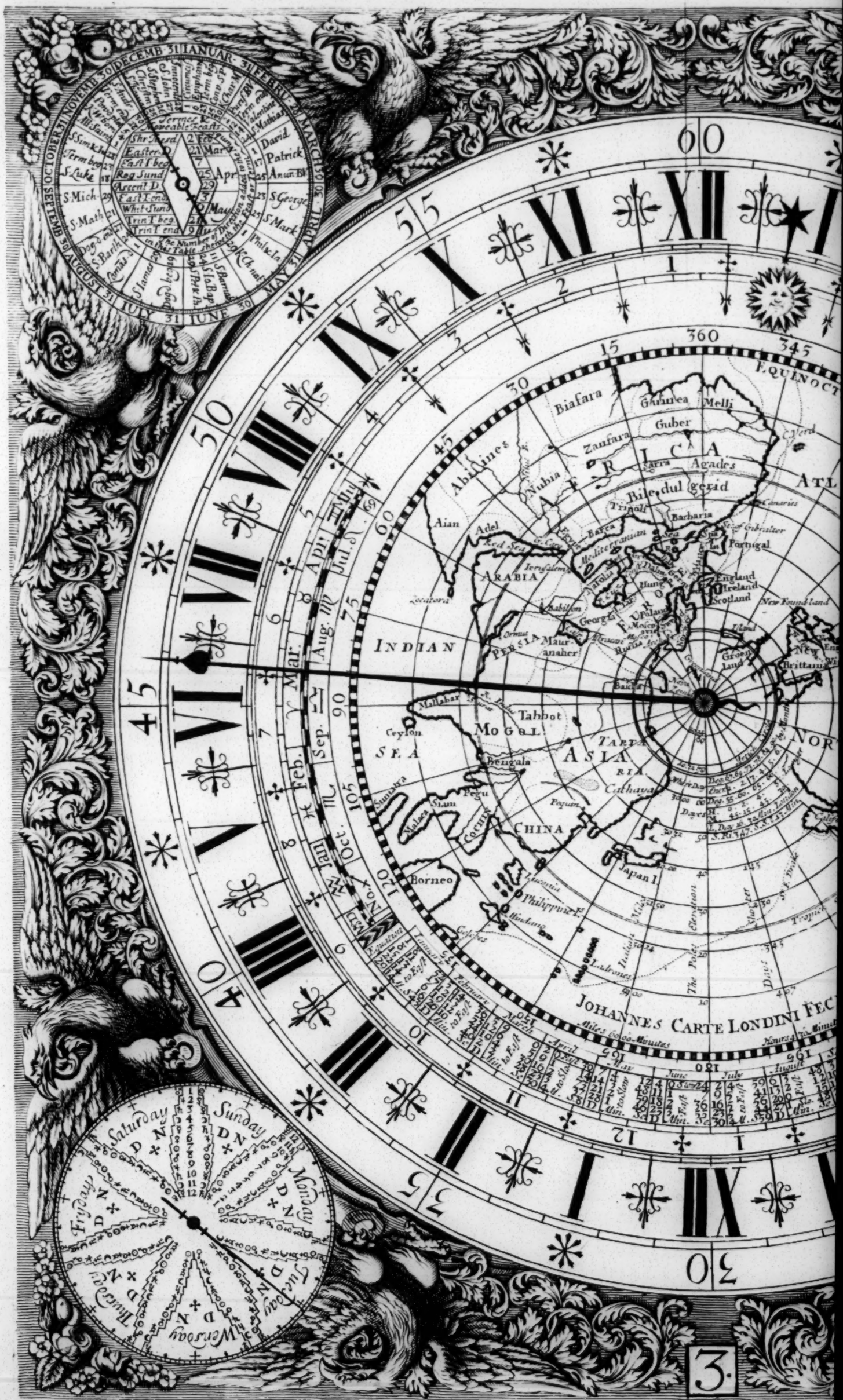
On the *Meridian* of 180 Degrees, are numbred the Degrees of Latitude.

On the *Meridian* of 195 Degrees, is an Account of the difference of the longest Day, in their several Latitudes, from ours at *London*, whether longer or shorter.

From the Equator to the Elevation of 51 Degrees, their Days are shorter than ours at *London*, as is mark'd in the Map.

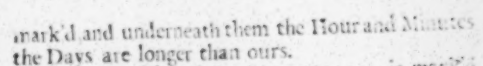
Above the Elevation of 50 Degrees, is mark'd how many Hours and Minutes the longest Day is at *London*.

At the Elevation of 60 Degrees, is mark'd (Deg.) for Degrees, where 55. 60. 65. 66. is



The Frontispiece of the
ALPHACAL CLOCK:
 Printed the 3d 1700, three Quarters past Twelve. Invented and Made
 by J. W. at the Fountain in the Middle-Temple, London.

ember the 3d 1700, three Quarters past Twelve. Invented and Made
in *Arden-Court*, near the *Fountain* in the *Middle-Temple*, *London*.



From the Elevation of 60. to 70. is marked the Degrees, where the Days encrease by Months.

The Learned and Ingenious well know, that the Uses of this Plate are too many to be represented in this Paper.

Within these is a Hand from the Centre, which moving round once in an Hour, shewes the Minutes.

And at the bottom of this Dial-plate, is shew'd
the Day of the Month.

The Southern Hemisphere is placed below on the Cale, on which is mark'd, with a prick'd Line, Sir Francis Drake's Voyage round the World, agreeable to that on the Northern Hemisphere.

THE
Four Plates on the Corners are fix'd:

The first by a Hand moving round from the Centre once in a Year, sheweth on the outermost Circle, the Months of the Year, with how many Days are in each Month. On the second Circle, the Day of the Month, and by a longer Stroke every fifth Day. On the third Circle is shewed, the fix'd Beasts, the Terms and remarkable Days throughout the Year. The 4th Circle sheweth, what Day of the Month each of them happen on.

Within these Circles is a Table of the moveable Feasts and Terms, which, by adding the Number of Direction (hereafter mention'd), to the Number in this Table, shews the Day of the moveable Feasts or Terms for ever.

On the second Plate, by a Hand moving round once a Week, is shewn the Day of the Week; and on the outermost Circle, the Hour of the Day, (accounted from Mid-night) every third Hour being distinguished by a long stroke; and in the Division belonging to each Day, (from the Centre upward) are engraven the Characters of the Planets, in order as they govern the Hours of the Day and Night: And here note, These Planetary Hours are to be computed by the length or shortness of the Day or Night; which length or shortness is shewn on the before mention'd large Plate.

The third Plate on the *West* side has two Hands; the first, or uppermost moves round once in 28 Years, and shews on the outermost Circle, the Dominical Letters. The second, or Innermost Hand moves round once in 19 Years, and shews on the Innermost Circle, the Golden Number: Within these Circles is a Table of the Number of Direction, in which, if you seek the Dominical Letter on the top, and in the side Column on the Left Hand find the Golden Number. In the common Angle you have the Number of Direction, which is the Number of Days to be added to the Day of the Month against the moveable Feast or Term, (as is before mention'd in the Description of the first Plate) and the Sum shews the true Day of the Month, that the Feast or Term falls on.

As for Example: In the Year 1700, the Dominical Letters are *G. F.* and the Golden Number 10. (*G.* being only useful to *February 25*) enter the Table with *F.* on the top, and 10 in the side Column; and in the Angle of meeting you find 10 to be the Number of Direction; this added to *March* the 21st set against *Easter*, gives the 31st of *March* for *Easter Sunday*: In the like manner add 10 Days to *April* the 7th, and you will find *Easter Term* begins *April* the 17th. Understand the like of the rest.

The fourth Plate, by a Hand moving round once in 29 Days and a half, shews in the outermost Circle, the Age of the Moon. On the second Circle, the time of High-Water at *London-Bridge*: And on the third Circle the Hour and Minute of the Moons *Sourbing*. In the middle of these Circles, is a Tide-Table, to find the time of High-Water at the Places specified, by adding the Hour and Minute set against the Port, to the Hour and Minute of the Moons *Sourbing*; the Sum (rejecting 12, if the Number exceeds) is the exact time of High-Water: This is so plain, it needs no Example.

At the bottom of this Table is shewed the various Faces of the Moon, according to her encrease and decrease

By the Author you may also be furnish'd with the best
sorts of Clocks and Watches, and have any part of
Astronomy, performed by Clock-work, the Art of
mending Watches being the difficult part of the Trade
and requiring a great deal of Experience; as well as
Judgment and Skill in working; he has made such
Experiments therein, as have enabled him to mend
Watches as to make 'em, to perform and go well tho'
they have never gone well before.